ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP
PEACE REGION – (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING - SPRING 2025

Site Number	Location	Name	Hwy	km
PH093	Shaftesbury Trail	The Big Eddie	684:02	8.86 to 8.98
Legal Description:		**UTM Co-ordinates**		
8-21-82-23 W5		11V E 467580.75	N 6333080.85	

Current Monitoring:	7-June-2025	**Previous Monitoring:**	19-Sep-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T., and Mr. Godfred Etiendem, Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs):	**Pneumatic Piezometers (PN):**	**Vibrating Wire Piezometers (VW):**	**Standpipe Piezometers (SP):**
SI23-4	N/A	VW23-1A VW23-4A VW23-4B VW23-5	SP23-2 SP23-3
Load Cell (LC):	**Strain Gauges:**	**SAAs:**	**Others:**
N/A	N/A	N/A	N/A

Readout Equipment Used			
Slope Inclinometers:	**Pneumatic Piezometers:**	**Vibrating Wire Piezometers:**	**Standpipe Piezometers:**
Two RST Digital Inclinometer probes with 2 ft. wheelbases and RST Pocket PC readouts	N/A	Geokon GK404	Heron dipmeter
Load Cell:	**Strain Gauges:**	**SAAs:**	**Others:**
N/A	N/A	N/A	N/A
Note: The datalogger previously installed on VW23-1 was moved to VW23-4B during the instrumentation repairs on November 27, 2024.			

Zones of New Movement:	None
Interpretation of Monitoring Results:	Slope inclinometer S23-1 was installed south (downslope) of Highway 684. SI23-1 sheared at a well-defined movement plane at approximately 11.5 m depth with a cumulative displacement of 56 mm. The average rate of movement over this zone was 97.1 mm/yr. The SI plots for the May 18, 2024, readings are attached for reference. Slope inclinometer SI23-4 was installed to the north (upslope) of Highway 684. SI23-4 has not shown a movement zone. Vibrating wire VW23-1, installed at SI23-1, was datalogged until November 27, 2024, and has been dry since initialization. Two vibrating wire piezometers VW23-4A and VW23-4B, were installed in the same test hole as SI23-4. VW23-4A has been dry since installation.

	VW23-4B has been datalogged since November 27, 2024, and showed a decrease in groundwater level of 0.14 m since the fall of 2024 readings. This groundwater level is at the lowest recorded level. VW23-5, installed on the backslope above the highway, was dry during the Fall 2024 readings and showed a groundwater elevation of 455.25 m during the Spring 2025 readings. Standpipe piezometers, SP23-2 and SP23-3, installed along the north side of the highway showed decreases in groundwater level of 0.46 m and 0.27 m, respectively.
Future Work:	The instruments should be read again in the fall of 2025.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	• Table PH093-1: Spring 2025 – Highway 684:02 The Big Eddie Slide Slope Inclinometer Instrumentation Reading Summary • Table PH093-2: Spring 2025 – Highway 684:02 The Big Eddie Slide Vibrating Wire Piezometer Instrumentation Reading Summary • Table PH093-3: Spring 2025 – Highway 684:02 The Big Eddie Slide Standpipe Piezometer Instrumentation Reading Summary • Statement for Use and Interpretation of Report • APPENDIX A - PH093 SPRING 2025 o Field Inspector's report o Site Plan Showing Instrument Locations (Drawing No. 32121-PH093-1) o SI Reading Plots o Figure PH093-1 (Vibrating Wire Piezometer Depths) o Figure PH093-2 (Vibrating Wire Piezometer Elevations)

We trust this report meets your requirements at present. If you have any questions, please contact the undersigned at your convenience.

Yours very truly,
Thurber Engineering Ltd.
Don Proudfoot , M. Eng., P. Eng.
Senior Geotechnical Engineer

July 11, 2025

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE: Don Proudfoot
RM APEGA ID #: 51674
DATE: July 11, 2025
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Lucas Green, P.Eng.
Geotechnical Engineer

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Table PH093-1: Spring 2025 – Highway 684:02 The Big Eddie Slide Slope Inclinometer Instrumentation Reading Summary

Date Monitored: June 7, 2025

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AT NOTED DEPTH SINCE INITIAL READING (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI23-1	*October 19, 2023*	*56.2 mm over 10.0 m to 13.0 m depth in 159° direction*	*147.3 mm/y In November 2023*	*Sheared at 11.5 m*	*May 18, 2024*	*N/A*	*N/A*	*N/A*
SI23-4	October 19, 2023	No discernible movement	No discernible movement	N/A	September 19, 2024	N/A	N/A	N/A

Drawing 32121-PH093-1 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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Table PH093-2: Spring 2025 – Highway 684:02 The Big Eddie Slide Vibrating Wire Piezometer Instrumentation Reading Summary

Date Monitored: June 7, 2025

INSTRUMENT	DATE INITIALIZED	GROUND ELEVATION (m)	TIP DEPTH (m)	CURRENT STATUS	MAXIMUM GROUNDWATER ELEVATION (m)	CURRENT GROUNDWATER ELEVATION (m)	PREVIOUS GROUNDWATER ELEVATION (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW23-1	October 19, 2023	452.12	18.04	Operational	Dry	Dry	Dry	Dry
VW23-4A	October 19, 2023	456.71	15.01	Operational	441.74 on December 21, 2023	Dry	Dry	Dry
VW23-4B	October 19, 2023	456.71	24.77	Operational	446.51 on May 18, 2024	436.66	436.80	-0.14
VW23-5	October 19, 2023	463.06	7.83	Operational	455.25 on December 21, 2023	455.25	Dry	Dry

Drawing 32121-PH093-1 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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Table PH093-3: Spring 2025 – Highway 684:02 The Big Eddie Slide Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: June 7, 2025

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED WATER LEVEL ELEVATION (m)	MEASURED WATER LEVEL BGS (m)	PREVIOUS READING (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
SP23-2	October 19, 2023	19.51	459.29	Active	455.83 on September 19, 2024	455.37	455.83	-0.46
SP23-3	October 19, 2023	19.13	451.22	Active	446.89 on September 19, 2024	446.62	446.89	-0.27

Drawings 32123-PH093-1 in Appendix A provide sketches of the approximate locations of the monitoring instrumentation for this site.

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STATEMENT FOR USE AND INTERPRETATION OF REPORT

1. STANDARD OF CARE

This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT, AS DESCRIBED ABOVE. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TOTHE WHOLE OF THE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives, and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT**. Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

5. INTERPRETATION OF THE REPORT

a) **Nature and Exactness of Soil and Contaminant Description:** Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors is inherently judgement-based. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other parties making use of such documents or records with or without our express written consent need to be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) **Reliance on Provided Information:** The evaluation and conclusions contained in the Report have been prepared based on conditions in evidence at the time of site inspections and based on information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

c) **Design Services:** The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber is recommended to be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design need to be reported to Thurber immediately so that Thurber can address potential conflicts.

d) **Construction Services:** During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions to confirm and document that the site conditions do not materially differ from those conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or other parties who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes, but is not limited to, decisions made to develop, purchase, or sell land, unless such decisions expressly form part of the stated purpose of the Report as described in Paragraph 3.

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ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022164)
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING RESULTS

SPRING 2025

APPENDIX A
DATA PRESENTATION

SITE PH093: HWY 684:02, THE BIG EDDIE LANDSLIDE

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH093)
SPRING 2025

Location:	Hwy 684:02 Big Eddie Slide	**Readout:**	GK 404 SN 364
File Number:	32121	**Casing Diameter:**	2.75"
Probe:	RST SET 8R	**Temp:**	12
Cable:	RST SET 8R	**Read by:**	NKR/GE

SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (UTM 11)		Date	Stickup (m)	Readings Depth from top of **casing** (ft)	Azimuth of A+ Groove	Current Bottom Depth Readings				Remarks
	Northing	Easting				degree	A+	A-	B+	B-	
SI23-4	6219684	467056	07-Jun-25	0.87	84 to 2	156	-182	195	-277	285	Readings start 18.5" off bottom

VIBRATING WIRE PIEZOMETER (VW) READINGS

PN #	Serial	GPS Location (UTM 11)		Location	Date	Reading		Comments
		Northing	Easting			B Unit	°C	
VW23-1	168532	6219621	467077	Attached to TH23-1	07-Jun-25	8368.2	6.7	
VW23-4A	175703	6219684	467056	Attached to TH23-4	07-Jun-25	8320.1	6.4	
VW23-4B	168520	6219684	467056	Attached to TH23-4	07-Jun-25	Downloaded		Datalogger, Download reading
VW23-5	175712	6219736	467059	Attached to TH23-5	07-Jun-25	8527.6	6.6	

STANDPIPE PIEZOMETER (SP) READINGS

SP#	GPS Location (UTM 11)		Date	Stick-up (m)	Water level below top of pipe (m)	Comments
	Northing	Easting				
SP23-2	6219669	467009	07-Jun-25	0.93	4.85	
SP23-3	6215664	467132	07-Jun-25	0.77	5.37	

INSPECTOR REPORT

Datalogger was moved from VW23-1(168532) on Nov 27,2024 during the Instrumentation repairs in Peace River.

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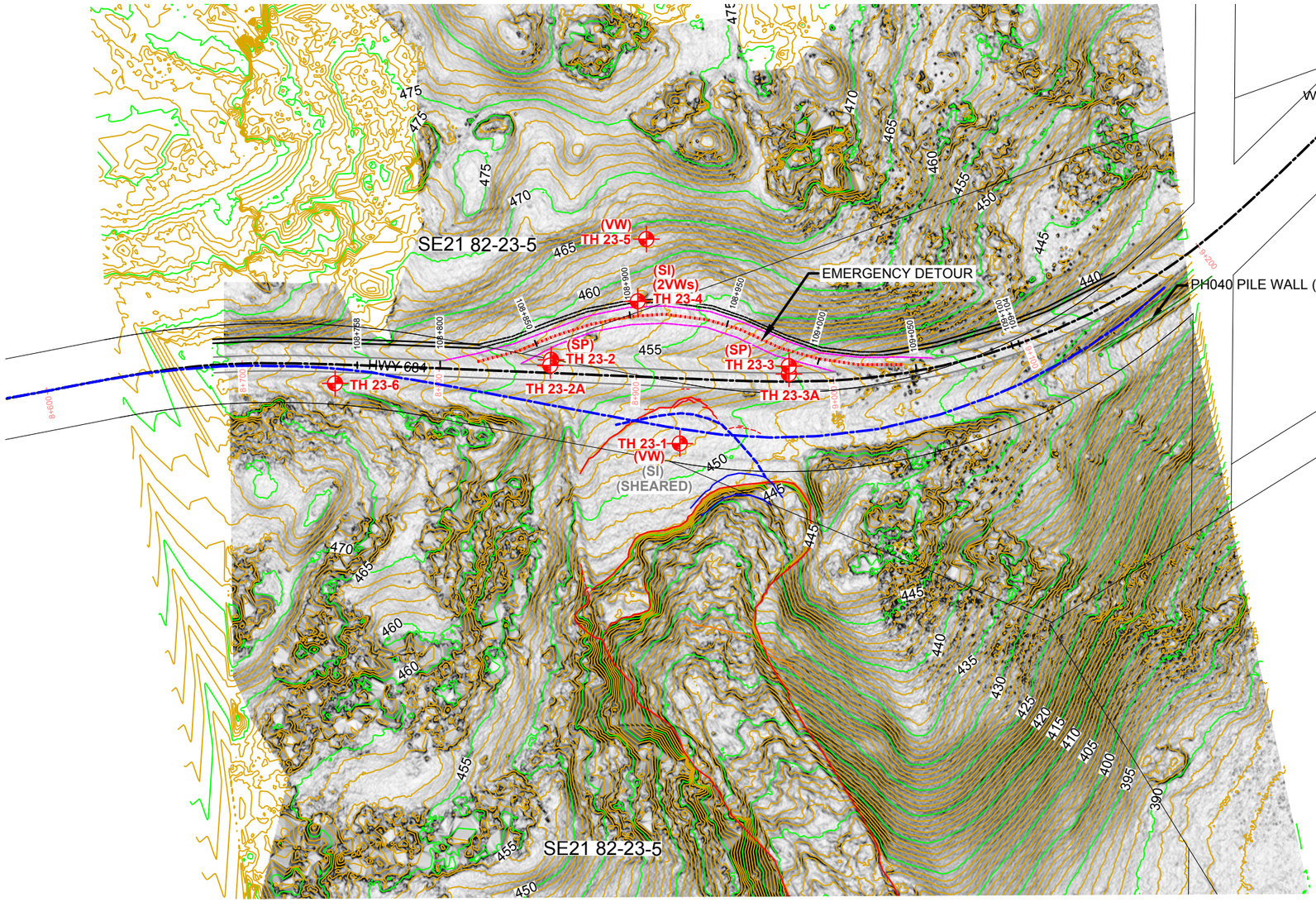

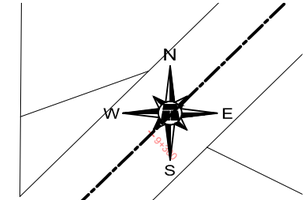

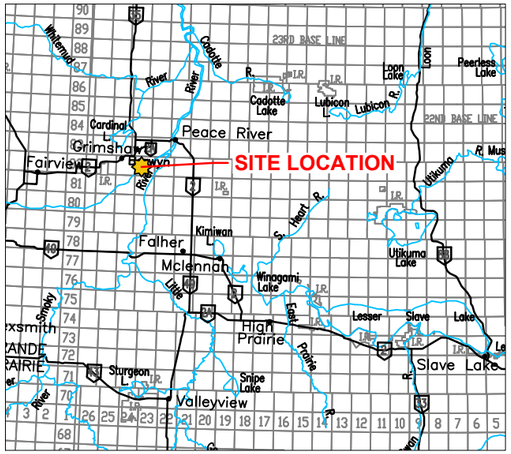

KEY MAP
SCALE 1:3 000 000

0 25 50 75 100 125 150m
SCALE 1:2500

LIDAR FROM JUNE 2023 SURVEY AND DETOUR BASE PLAN PROVIDED BY MCINTOSH PERRY

LEGEND

- SURVEYED TEST HOLE LOCATION
- (SP) STANDPIPE PIEZOMETER
- (SI) SLOPE INCLINOMETER
- (VW) VIBRATING WIRE PIEZOMETER
- SCARP
- CRACK
- CRACK SEEN ON GOOGLE EARTH MAY 10, 2023, SATELLITE IMAGE
- GROUND SURFACE CONTOUR (CONTOUR INTERVAL = 1m)
- ESTIMATED 1986 CENTERLINE
- 1986 SLIDE EXTENT
- 1986 SCARP

Alberta Transportation

PEACE REGION (PEACE RIVER DISTRICT)
BIG EDDIE: HWY 684:02 km 8.86 TO KM 8.98

SITE PLAN SHOWING INSTRUMENT LOCATIONS

DWG No. 32121-PH093-1

DRAWN BY	ML
DESIGNED BY	KEF
APPROVED BY	DWP
SCALE	1:2500
DATE	JULY 2025
FILE No.	32121

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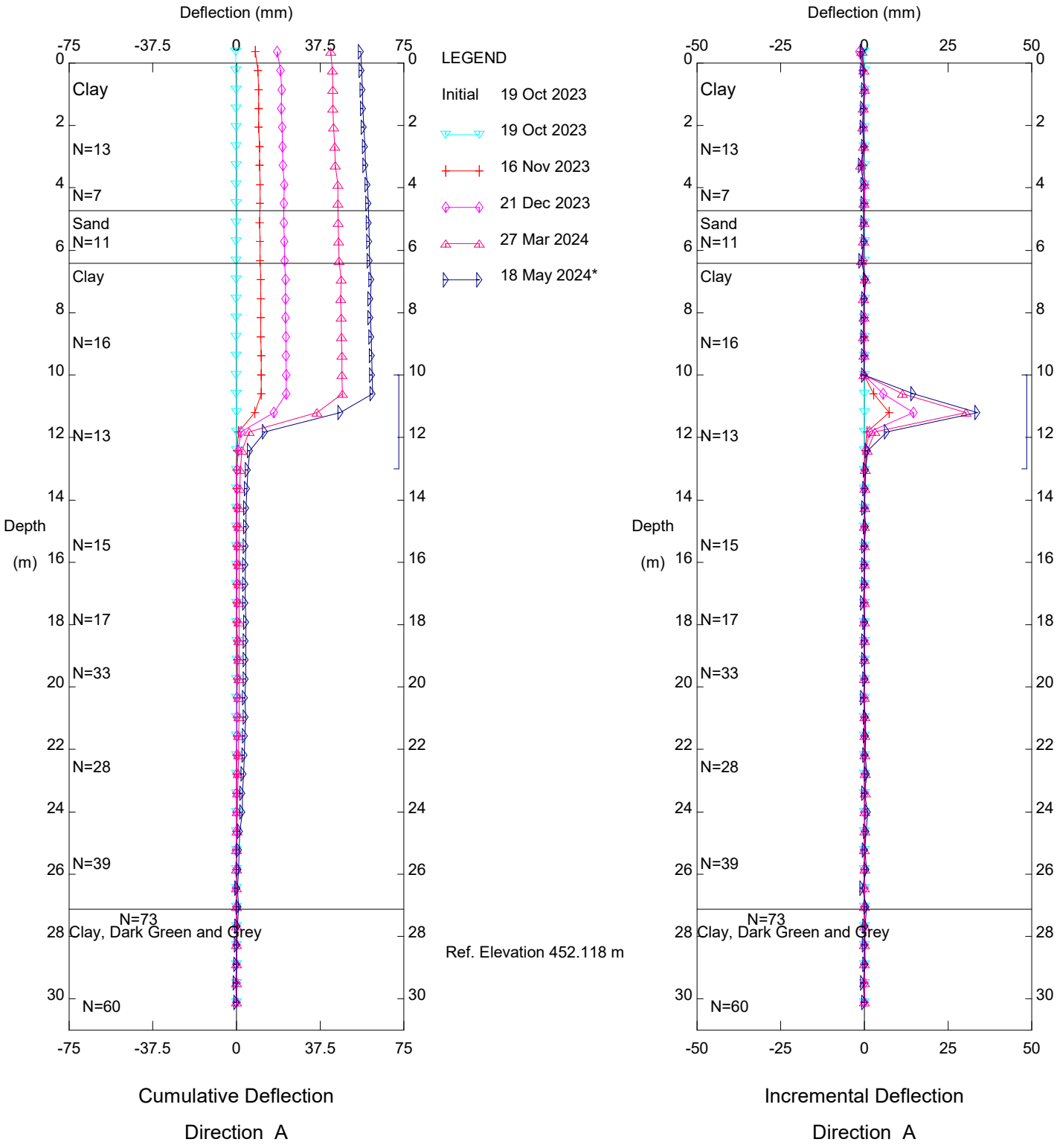

PH093 Big Eddie Slide, Inclinometer SI23-1

Sets marked * include zero shift and/or rotation corrections.

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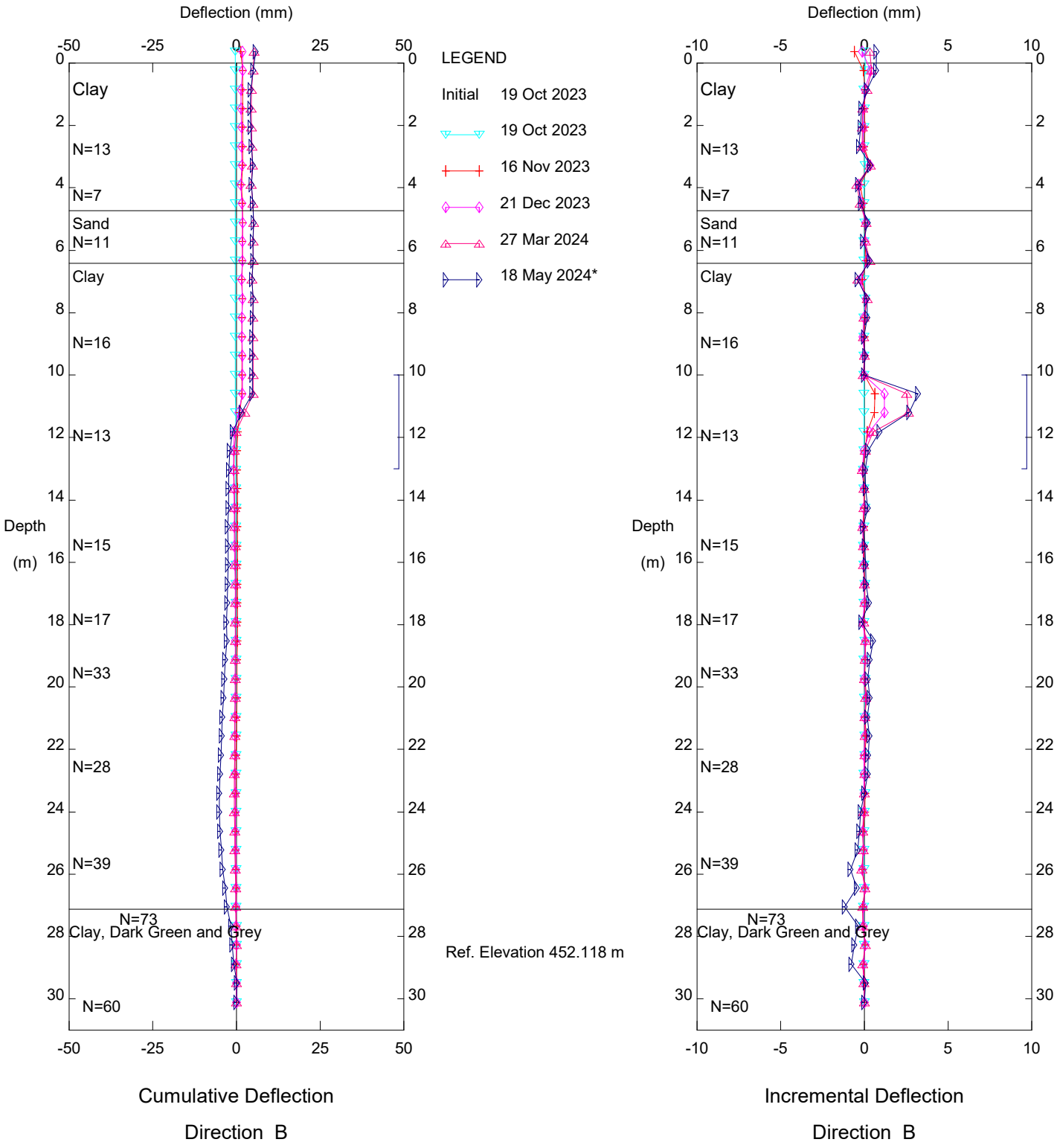

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

PH093 Big Eddie Slide, Inclinometer SI23-1

Sets marked * include zero shift and/or rotation corrections.

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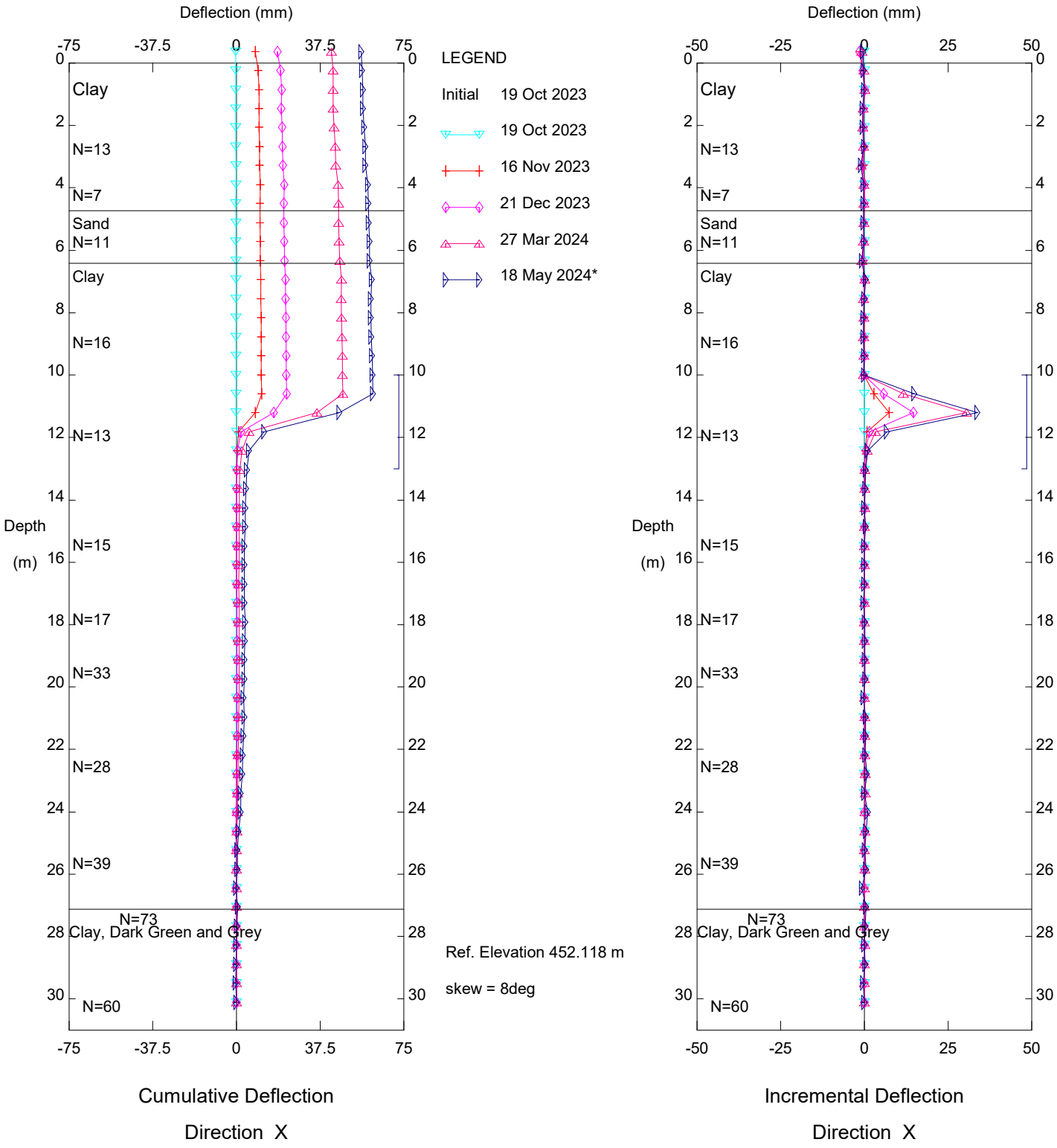

PH093 Big Eddie Slide, Inclinometer SI23-1

Sets marked * include zero shift and/or rotation corrections.

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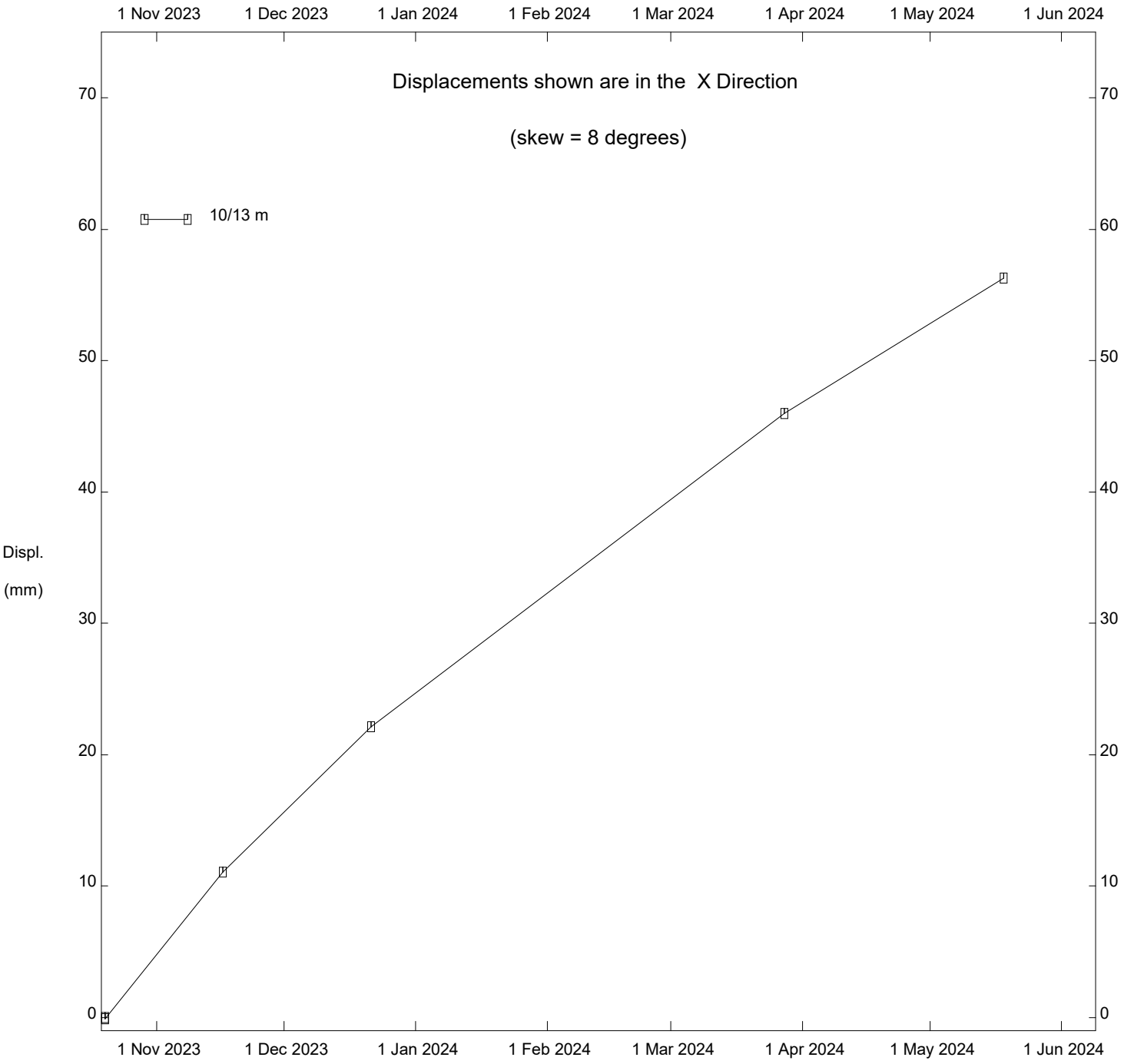
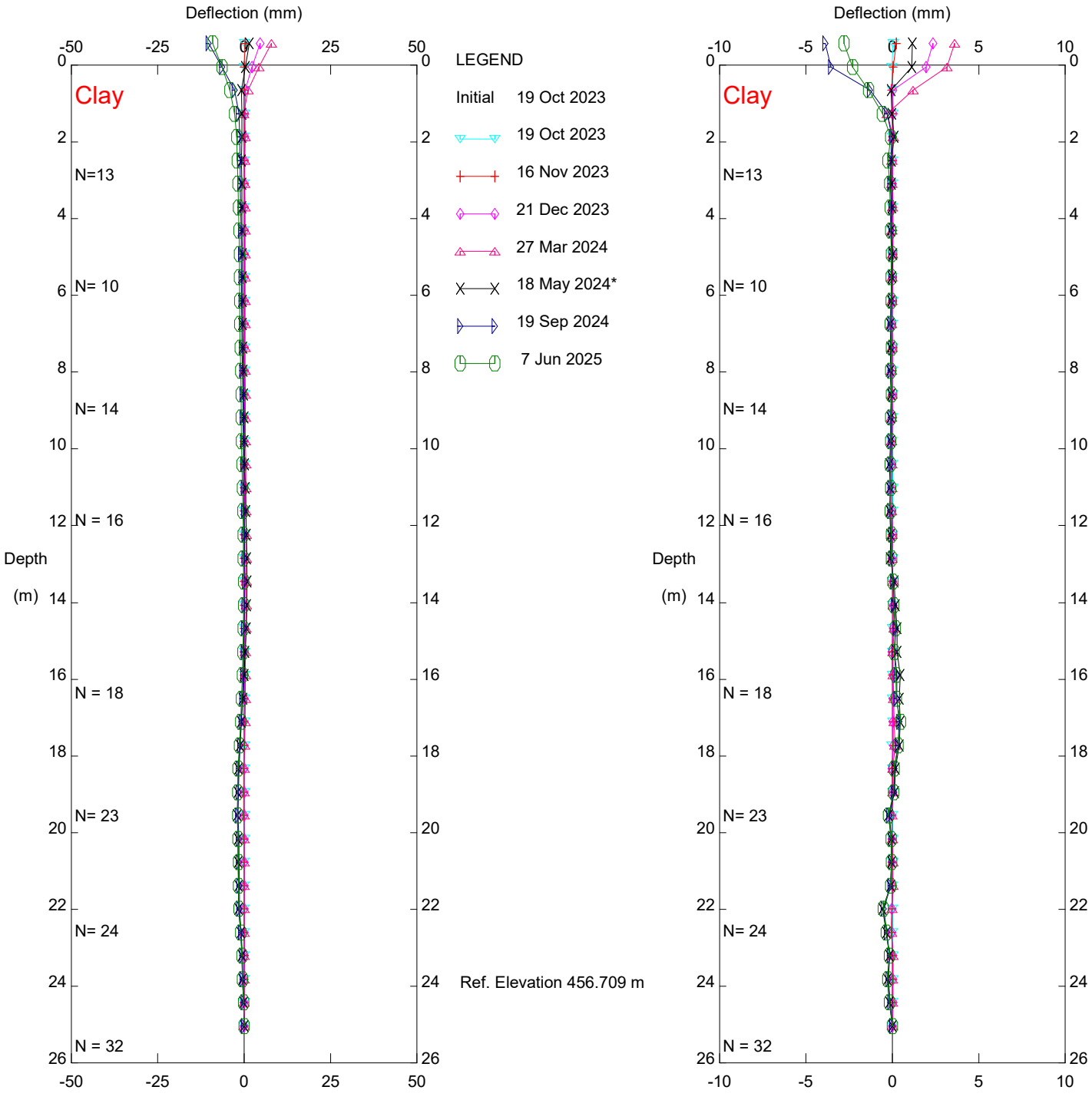


PH093 Big Eddie Slide, Inclinometer SI23-1

Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

PH093 Big Eddie Slide, Inclinometer SI23-4

Sets marked * include zero shift and/or rotation corrections.

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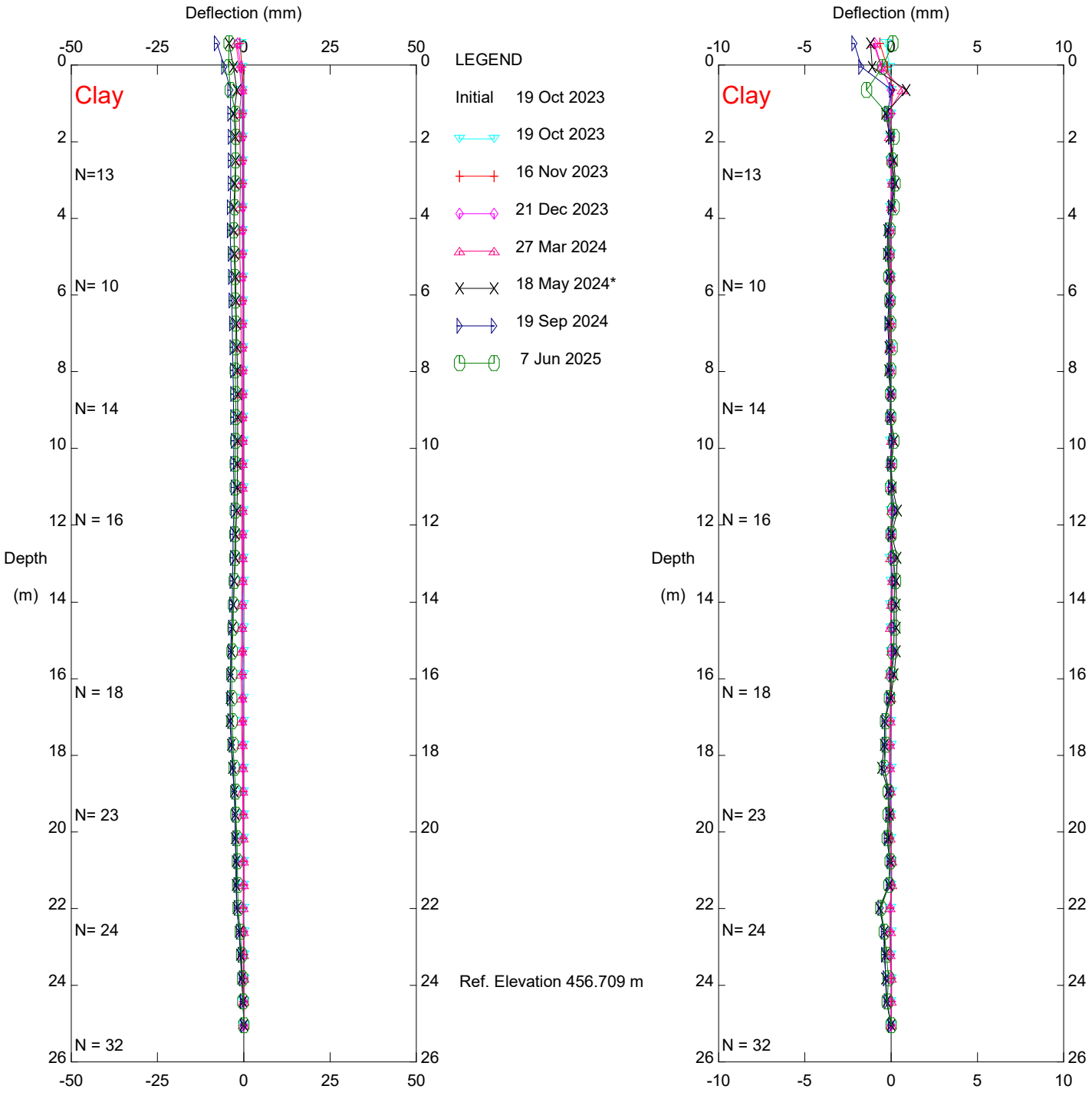

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

PH093 Big Eddie Slide, Inclinometer SI23-4

Sets marked * include zero shift and/or rotation corrections.

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FIGURE PH093-1
BIG EDDIE LANDSLIDE PIEZOMETER DEPTHS

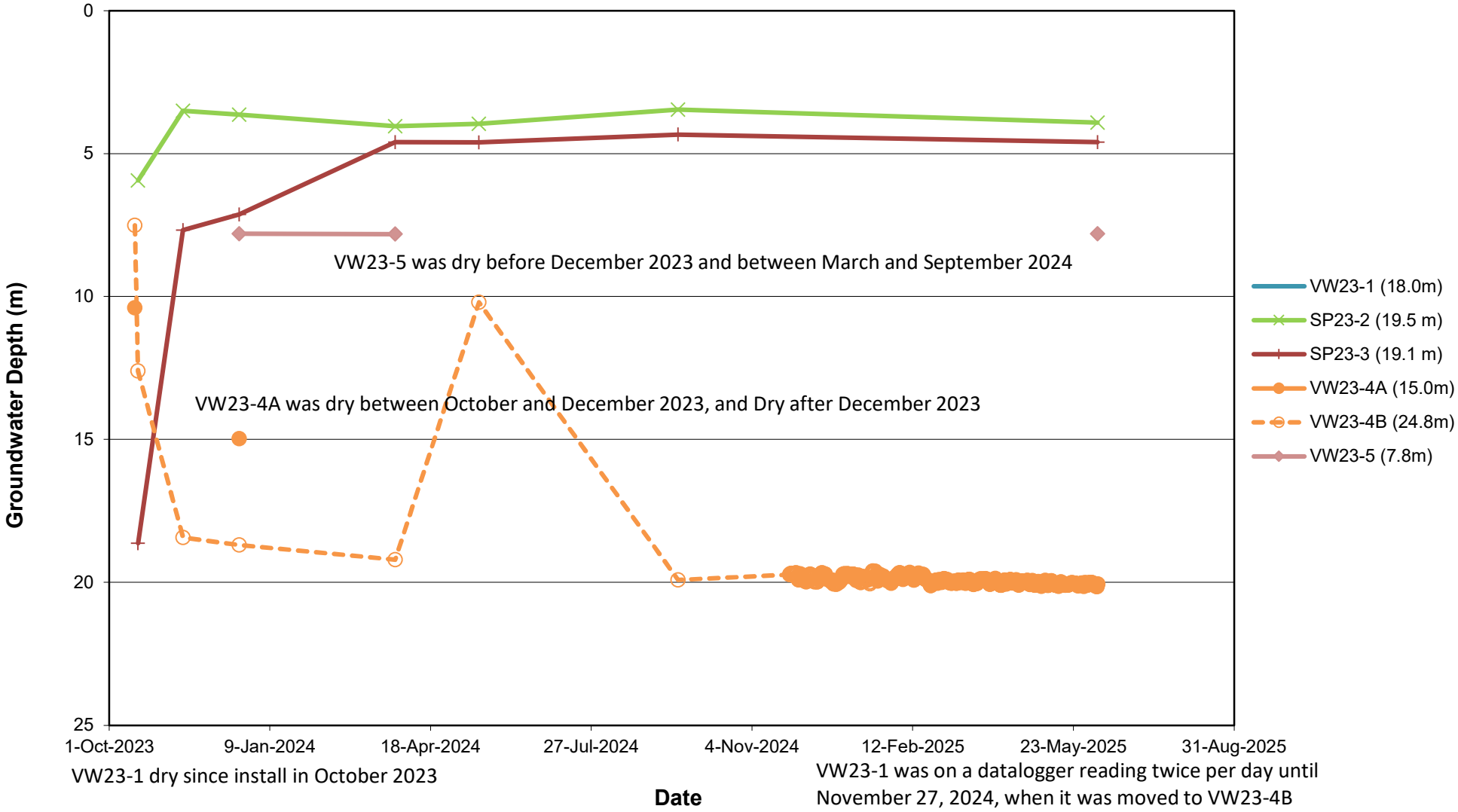

FIGURE PH093-2
BIG EDDIE LANDSLIDE PIEZOMETER ELEVATIONS